TESTIMONY OF WILLIAM E. TAYLOR

ON BEHALF OF

VERIZON MASSACHUSETTS

D.T.E 03-60

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PUBLIC VERSION

I.   INTRODUCTION

A.   Background and Qualifications

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3   Q.   Please state your name, occupation and business address.

4   A.   My name is William E. Taylor. I am Senior Vice President of National Economic
5   Research Associates, Inc. ("NERA"), head of its telecommunications economics
6   practice, and head of its Cambridge office. My business address is One Main Street,
7   Cambridge, Massachusetts 02142.

8   Q.   Please summarize your qualifications.

9   A.   I have been an economist for over twenty-five years. I received a B.A. degree in
10   economics (Magna Cum Laude) from Harvard College in 1968, a master's degree in
11   statistics from the University of California at Berkeley in 1970, and a Ph.D. in
12   Economics from Berkeley in 1974, specializing in industrial organization and
13   econometrics. I have taught and published research in the areas of microeconomics,
14   theoretical and applied econometrics, and telecommunications policy at academic
15   institutions (including the economics departments of Cornell University, the Catholic
16   University of Louvain in Belgium, and the Massachusetts Institute of Technology) and
17   at research organizations in the telecommunications industry (including Bell
18   Laboratories and Bell Communications Research, Inc.). I have participated in
19   telecommunications regulatory proceedings before state public service commissions,
20   the Federal Communications Commission ("FCC") and the Canadian Radio-Television

1   and Telecommunications Commission concerning incentive regulation, productivity,

2   access charges, and pricing for economic efficiency. Since 1988, I have testified in

3   incentive regulation implementation and review proceedings in more than a dozen

4   states, filed numerous studies in the Federal Communications Commission's initial and

5   review price regulation dockets for interstate telephone services, consulted on incentive

6   regulation issues in other US jurisdictions, the UK, New Zealand, Canada, and

7   Australia, and published my work in professional journals and books. Recently, I was

8   chosen by the Mexican Federal Telecommunications Commission and Telmex to

9   arbitrate the renewal of the Telmex price cap plan in Mexico.

10   A copy of my vita listing publications and testimonies is attached to my testimony.

11   **B.**   **Purpose Of The Testimony**

12   Q.   What is the purpose of your testimony?

13   A.   I have been asked by Verizon Massachusetts ("Verizon MA") to provide estimates of

14   the likely number of additional hot cut requests (over current levels) that Verizon MA

15   will experience if: (a) the Department finds that CLECs would not be impaired without

16   access to "mass market" unbundled local switching, and (b) as a result, UNE-P is

17   eliminated as an option for competitors providing local exchange service to end-user

18   customers in Massachusetts. In Verizon MA's Panel Testimony concerning hot cuts,

19   these estimates of incremental hot cut volumes are used as the input to a model

20   assessing the "scalability" of the hot cut process.

21   The estimates are highly conservative in that if they err, they err on the side of

22   overestimating the hot cut demand that Verizon MA would face in a post-UNE-P

1   environment. This is true for several reasons that will be discussed in greater detail

2   below, but two reasons in particular should be noted here.

3   First, for purposes of my analysis, I have assumed that UNE-P will be eliminated on a

4   statewide basis, even though under the *Triennial Review Order* impairment standards,

5   determinations for mass-market local switching will be made on a "market area" basis

6   and the Department may ultimately conclude that CLECs would be impaired in some

7   market areas but not others. In such a case, the number of incremental hot cuts would

8   be less than that estimated in this testimony.

9   Second, some CLECs may, upon the elimination of UNE-P, migrate to non-UNE-L

10   alternatives such as resale or (particularly in the case of cable companies) may choose

11   to provide their own switching and loop facilities. Hot cuts would not be required for

12   migrations from Verizon MA to any of these alternatives.

13   **C.   Summary of Main Conclusions**

14

15   Q.   Please summarize your conclusions.

16   A.   In the current environment, certain changes that customers and carriers make regarding

17   local service provisioning result in hot cut requests to Verizon MA or requires that

18   Verizon MA perform loop-related work when dial tone is to be migrated to a Verizon

19   MA switch, *i.e.*, a winback situation. Under the terms of the *Triennial Review Order*,

20   that environment may change. If the Department determines that CLECs would not be

21   impaired in some markets if Verizon MA stops offering local switching as a UNE, then

22   two things will happen:

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1   •   Some customer or carrier-initiated changes that did not require a hot cut in the past
2   may require a hot cut in the post-UNE-P environment, and

3   •   Some portion of the current embedded base of UNE-P customers may be migrated
4   over time to UNE-L service and that migration will also require additional hot cuts.

5   For both of these reasons, the volume of hot cut requests to Verizon MA can be

6   expected to increase in a post-UNE-P world.

7 Q.   Please describe the changes in demand for hot cuts that would be expected in a post-

8   UNE-P world as a result of customer-initiated carrier changes.

9 A.   In the post-UNE-P world, many CLECs may substitute UNE-L for UNE-P

10   arrangements for serving their customers; and subsequent migrations of customers

11   between such UNE-L CLECs (or from Verizon MA to a UNE-L CLEC) would require

12   hot cuts. However, as noted above, some CLECs may choose to switch to a strategy

13   based on reselling Verizon MA's retail service or utilizing their own loop and switch

14   facilities; and migrations between such CLECs and Verizon MA's retail service would

15   not require hot cuts. Thus, a "conservative" (in the sense of biased-toward-

16   overstatement) estimate of the incremental hot cut requests that Verizon MA will face

17   in a post-UNE-P world is given by a forecast of the flow of requests processed by

18   Verizon MA for migrations between UNE-P CLECs, migrations between Resale and

19   UNE-P CLEC service or migrations from Verizon MA's retail service to a UNE-P

20   CLEC. Similarly, the migration of customers from CLECs' UNE-P service to Verizon

21   MA provides an estimate of the incremental demand for winbacks.

22 Q.   Why does the approach described above result in a conservative estimate of incremental

23   hot cut (and winback) activity resulting from the elimination of UNE-P?

1   A.   Aside from the reasons already discussed, there are several additional reasons why these

2   measures based on current migration activity result in highly conservative estimates for

3   incremental hot cut and winback activity in a post-UNE-P world.

4   First, increased intermodal competition for traditional wireline telephone service means

5   that an increased number of customers who are dissatisfied with their wireline provider,

6   or who simply prefer the functionalities that alternative technologies might offer, will

7   migrate to non-wireline substitutes, primarily wireless, cable, and Internet telephony.

8   All else equal, the growth of these substitutes will reduce the proportion of hot cut

9   requests and winbacks associated with a given level of wireline customer churn. In this

10   case many customers might leave Verizon MA in the future, but fewer of them will

11   migrate to a wireline competitor; hence, the number of hot cuts associated with those

12   migrations will fall.

13   Second, the increased offering of bundled communications services by all providers

14   (ILECs, CLECs, wireless and cable) has the effect of reducing customer churn, all else

15   equal. Intuitively, bundling reduces churn because a customer that buys a package of

16   services must then compare competitors' offerings of multiple services before deciding

17   to switch suppliers. In addition, by offering a selection of bundled services, a firm can

18   more closely match the idiosyncratic preferences of individual customers than if it

19   offered all services à la carte at constant prices. All of the major communications

20   suppliers (ILECs, CLECs, wireless and cable companies) are increasingly emphasizing

21   their packaged offerings, often explicitly for the purpose of reducing customer churn.

22   See Exhibit I for examples of bundled offerings.

1   Industry estimates imply that the reduction in churn from bundling services is

2   significant. For example, while monthly churn rates for standalone local and long

3   distance service are estimated to be 3.7 and 4.4 percent/month, respectively, when the

4   services are bundled together the rate is 3.1 percent, a reduction of almost a quarter

5   from the average standalone rate[1]. Higher churn reductions are observed when more

6   services are added to the bundle.

7   Q.   What other factors could contribute to an increase in demand for hot cuts that would be

8   expected in a post-UNE-P world?

9   A.   The second component of the incremental demand for hot cuts would be the transition

10   of the embedded base of CLEC UNE-P subscribers to UNE-L pursuant to the *Triennial*

11   *Review Order*. I refer to this component of the incremental hot cut demand as "carrier-

12   initiated" service changes, since it would be independent of consumer choice. (The

13   consumer would purchase services from the same carrier as before and would

14   essentially be unaware of the process or the change.) Subject to the requirements of the

15   *Triennial Review Order* (*see* FCC Rule 319(d)(2)(iv)), it would be the carrier's decision

16   — not the end-user customer's — when and how to migrate their customer onto the

17   CLEC switch.

18   Q.   Will the embedded-base conversion requirement give rise to a continuing increment of

19   the hot cut demand that Verizon MA would be required to handle?

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[1] Jeff Halpern and Gil Luria , "RBOCs: Consumer Bundling Shifts from a Liability to an Asset," Bernstein Research Weekly Notes (August 9, 2002) (hereafter cited as "Halpern & Luria").

1   A.   No. The *Triennial Review Order* requires that the conversion be completed within 27

2   months from a state commission's finding of non-impairment. Thus, the embedded

3   base conversion would increase Verizon MA's hot cut demand for only a limited

4   period. The long term increase in hot cut demand would be due solely to customer-

5   initiated changes in local service providers, as discussed above.

6   Q.   How did you estimate the total number of UNE-P lines that will constitute the

7   "embedded base" that will need to be migrated to UNE-L facilities pursuant to the

8   *Triennial Review Order*?

9   A.   The methodology, described in greater detail below in Section III, provides a

10   conservative measure of the incremental hot cut demand resulting from the embedded

11   base conversion.

12   This is true because not all carriers will choose to provision all of their former UNE-P

13   customers with UNE-L; some carriers may drop customers, migrate customers to resale,

14   or — as suggested by a recent statement of AT&T[2] — may seek to negotiate a

15   commercial arrangement for the purchase of a UNE-P-like service from Verizon at a

16   market price, if and when Verizon chooses to offer such a service. Each of these

17   alternatives will reduce the potential number of hot cuts below the current and projected

18   future volume of UNE-P lines.

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[2] *See* "AT&T CEO Urges End of Civil War With Bells" (Reuters September 15, 2003) ("Chief Executive Dave Dorman argued that the four dominant local telephone carriers should stop fighting regulations that require them to share their networks at government-mandated wholesale prices, and instead should work out commercial contracts to provide access to promote competition.").

1   Q.   Would the size of the embedded base be materially affected by the fact that CLECs

2   would be permitted to continue ordering UNE-P for as long as five months after a

3   finding of non-impairment by the Department, pursuant to FCC Rule 319(d)(2)(iv)?

4   A.   No. There is no evidence to suggest that CLEC UNE-P line growth over that period

5   would be materially impacted by this fact. Although the 5-month period could lead

6   CLECs to offer discounts or special promotions to induce customers to switch to a

7   UNE-P-based service with the expectation of migrating them to UNE-L as part of the

8   conversion of the embedded base, there is no clear evidence that this two-step migration

9   would be less expensive for the CLEC or less potentially disruptive for the customer.

10   This suggests that CLECs would likely choose to place customers directly on UNE-L

11   facilities once their own local switching arrangements are established. Indeed, the FCC

12   suggested this, albeit in a slightly different context, in the *Triennial Review Order*:

13   Once competitive carriers have incurred the fixed costs associated with
14   deploying their own switching facilities to support one-third of their
15   customers, we find it likely that such carriers will have an incentive to fill
16   the capacity of their switch such that they will not necessarily need the full
17   three years to complete the migration — assuming, of course, that the
18   incumbents can successfully manage the cutover process. (*Triennial*
19   *Review Order* ¶ 532 n.1630)

20   Q.   How can the monthly hot cut demand due to conversion of the embedded base be

21   determined based on the total size of that embedded base?

22   A.   Under the rules promulgated pursuant to the *Triennial Review Order* (*see* FCC Rule

23   319(d)(2)(iv)), CLECs must place orders to migrate 1/3 of the customers in the

24   embedded base from UNE-P by 13 months from the date the Department finds no

25   impairment, half of the remainder (*i.e.*, a second 1/3 of the customers comprising the

1   embedded base) 20 months from that date, and all of the final remainder (*i.e.*, the last

2   1/3 of the customers) by 27 months from that date. The scheduling of the conversion is

3   to be determined by negotiation between Verizon and the CLEC, and the negotiated

4   conversion plan is to be submitted to the Department.

5   There is a great deal of "play in the joints" of this schedule. For example, a schedule

6   could call for the conversion of all customers by the end of month 13 (or earlier) and

7   still be consistent with the FCC's requirements. Moreover, since the 1/3—1/3—1/3

8   schedule applies to customers, not lines, even a uniform, pro-rata conversion schedule

9   by customers could result in a schedule that is front- or back-loaded by lines.

10   For purposes of this analysis, I assume a uniform, pro-rata conversion (on an access line

11   basis) of each 1/3 of the embedded customer base within the time made available for

12   that conversion by the FCC's rules. I also conservatively assume that the conversion of

13   the first 1/3 of the base will begin not at the time of the non-impairment finding, but at

14   the time of submission of the negotiated conversion plan to the Department — *i.e.*, two

15   months from the Department's non-impairment determination (*see* FCC Rules

16   319(d)(2)(iv) & 319(d)(2)(iv)(B)).   This means that the period available for the

17   conversion of the first 1/3 will be 11 months instead of 13.

18   This assumption of a pro rata conversion is based on two considerations. First, CLECs

19   have mixed incentives regarding front-loading or back-loading the conversions. As the

20   FCC observed, the fact that the CLEC has already incurred the fixed cost of purchasing

21   and installing its switch suggests an incentive to fill it to capacity as quickly as possible.

22   On the other hand, the CLEC would benefit from delaying when it would incur the non-

1   recurring costs of collocation and hot cuts as long as possible. The assumption of

2   uniform conversion is thus a reasonable middle ground. Second, and more important,

3   the detailed schedule is subject to negotiation and, implicitly, to some form of dispute

4   resolution. This means that the CLECs' desires concerning front-loading or back-

5   loading will not be dispositive, and that appropriate weight will be given to the

6   operational advantages of a pro rata conversion, which would result in reducing Verizon

7   MA's need to temporarily increase its work force to handle "peak loading."

8 **II.   FACTORS AFFECTING HOT CUT DEMAND IN A POST UNE-**
9 **PREGULATORY ENVIRONMENT**

10 **A.   Incremental Demand Resulting from Customer-Initiated Changes In**
11 **Service Providers**

12 Q.   How would the volume of hot cuts that Verizon MA would be required to handle be

13   affected if UNE-P were no longer available to CLECs?

14 A.   Today, when a CLEC orders UNE-P service to migrate a Verizon MA retail customer to

15   its own retail service, Verizon MA does not perform a hot cut. Nor is a hot cut required

16   if a customer switches between UNE-P CLECs, or from a UNE-P CLEC to Verizon

17   MA. (A hot cut would be required, however, for a migration between a UNE-P CLEC

18   and a UNE-L CLEC.) Nor is a hot cut required when a customer switches between

19   Verizon MA and a CLEC providing resold Verizon MA service or between two CLECs

20   providing resold Verizon MA service. Similarly, a hot cut is not required when a

21   customer migrates between a resale-based and a UNE-P-based CLEC or when a CLEC

22   changes its wholesale service to UNE-P from resale (or vice-versa). In all of those

1   cases (*i.e.*, all of the cases where a hot cut is not required), Verizon MA remains the

2   switch provider.

3   Essentially, a hot cut (or work associated with a winback) need be performed only if a

4   customer's choice of service provider entails a change in the switch providing dial tone

5   to the retail customer. (To be precise, a switch change is a necessary but not sufficient

6   condition for requiring a hot cut. A necessary and sufficient condition is that the

7   transaction requires a change in the switch that provides dial tone but no change in the

8   loop. A change in both the loop and switch that serves the customer — such as would

9   be expected for migration to or from a facilities-based or intermodal service provider —

10   requires (from the perspective of frame work and coordination) the same task as a new

11   connection or disconnection — not a hot cut. Coordination is unnecessary because the

12   loop and switch that will serve the customer can be provisioned while the old

13   arrangement is still in place.)

14   If UNE-P were eliminated, however, CLECs would have to migrate to other forms of

15   provisioning local service to their customers, and to the extent that they migrate to

16   UNE-L (rather than switching to resale or fully-facilities-based provisioning), additional

17   hot cuts would be required that were not required in a UNE-P world. Hot cuts would be

18   required for retail-to-UNE-L migrations and for UNE-L-to-UNE-L migrations. Work is

19   also necessary for winbacks, *i.e.*, UNE-L to Verizon switch migrations. In these cases,

20   the end user would be changing switch providers but not the loop provider (which

21   would remain Verizon MA).

1   Q.   Please describe the flow of hot cut requests that Verizon receives under the current

2   rules, *i.e.*, where UNE-P is an available competitive provisioning alternative.

3   A.   Currently, the flow of hot cuts is equal to the flow of migrations involving UNE-L

4   CLECs, excluding those winbacks that for operational reasons may have to be

5   provisioned through disconnect/reconnect activity rather than hot cuts, as mentioned in

6   the Verizon MA's Panel Testimony. Volumes of hot cuts, therefore, depend to a large

7   extent on customer "churn" — the fraction of customer lines that change local service

8   suppliers in a given month. The number of hot cuts is not equal to customer churn,

9   however, for three key reasons:

10   • Some Verizon MA retail customers move out of Verizon MA's serving territory, or
11   discontinue service for other reasons (death, non-payment, etc.).

12   • Some Verizon retail MA customers switch to providers of wireless service or cable
13   telephony or voice-over-Internet services, or to other facilities-based CLECs.

14   • Some Verizon MA retail customers switch to CLEC UNE-P or CLEC resale
15   services.

16   Each of these three types of migrations is counted as churn from Verizon MA retail

17   service's perspective, but none of them results in hot cuts.

18   Currently, the volume of hot cuts is approximately equal to the number of lines

19   migrating from Verizon MA's retail service to the retail service offered by a CLEC

20   using UNE-L, plus the portion of the lines that Verizon wins back from a CLEC using

21   UNE-L.

22   Q.   Are there any other circumstances in which Verizon MA performs a hot cut under the

23   current rules?

1 A.   Yes. These relate to migration of customers from one CLEC to another and to changes

2   in the way that a CLEC decides to provide service to its customers. However, in both

3   cases, the volume of hot cut requests generated is likely to be small.

4   First, when a CLEC customer served by UNE-L migrates to another CLEC using UNE-

5   L, Verizon MA must rearrange the access line from the collocation space of one CLEC

6   to that of another.

7   Second, when a CLEC resale customer migrates to a CLEC (different or the same)

8   using UNE-L, Verizon MA must perform a hot cut because the identity of the switch

9   provider changes from Verizon MA to the CLEC.

10   Third, when a customer of a UNE-P CLEC migrates to a UNE-L CLEC (different or the

11   same), Verizon MA must perform a hot cut.

12   Table 1 shows all customer migrations that generate hot cuts under the current rules

13   (*i.e.*, where UNE-P is available).

14   **Table 1**

15   **Customer Migrations Generating Hot Cuts Under Current Rules**

FROM\TO	Verizon Retail	CLEC FB	CLEC UNE-L	CLEC UNE-P	CLEC Resale
Verizon Retail			X		
CLEC FB					
CLEC UNE-L	W		X	W	W
CLEC UNE-P			X		
CLEC Resale			X		

16

17 Q.   Please explain Table 1.

1   A.   The table shows the Verizon MA work requirements for conversions from the

2   provisioning alternatives shown in the row headings to the provisioning alternatives

3   shown in the column headings. (Thus, the first cell in the row headed "CLEC UNE-L"

4   relates to migrations from UNE-L CLECs (the row) to Verizon MA retail (the column).)

5   "FB" refers to facilities-based provisioning, which, for purposes of this table, means a

6   CLEC that utilizes its own loop and switch. An "X" indicates an ordinary hot cut and a

7   "W" indicates a winback.

8   The first thing that should be noted is that the Table (considered as a matrix) is

9   symmetric about its main diagonal (from upper-left to lower-right), except that the Ws

10   and Xs are reversed. Symmetry reflects the fact that some form of hot cut is required

11   whenever the ownership of the switch supplying dial tone to the customer changes. The

12   exchange of Ws and Xs across the main diagonal simply follows the change in switch

13   ownership: changes to a Verizon MA switch represent winbacks while changes to a

14   CLEC switch represent ordinary hot cuts.

15   Second, migrations from (or to) CLEC A's UNE-L service to (or from) CLEC B's

16   UNE-P-based or resale-based service may be generated by a customer's decision to

17   change carriers (so that CLEC B serves the customer and purchases UNE-P or resale) or

18   by CLEC A's decision to change the method by which it serves its customer. In both

19   cases, a loop that terminates (ultimately) on CLEC A's switch is effectively shifted to

20   terminate on Verizon MA's switch.

1   Finally, migrations from CLEC UNE-L to CLEC UNE-L presumably involve a

2   customer's decision to change suppliers. Such a change entails a change in the switch

3   supplying dial tone to the customer and thus requires a hot cut if the same loop is used.

4 Q.   Please describe the factors that will impact the volume of hot cuts that Verizon MA will

5   likely perform if Verizon MA is no longer required to provide local switching on an

6   unbundled basis.

7 A.   If switching is eliminated as a UNE, CLECs would no longer be able to provision

8   service using UNE-P, except to the extent that, as mentioned above, Verizon chooses to

9   make a UNE-P-like service available at market-based rates and on a commercial basis.

10   Some CLECs would then likely provision service to some customers using UNE-L, so

11   that Verizon MA would need to perform additional hot cuts, over and above the flow of

12   hot cuts performed today under current rules. Table 2 illustrates the demand for hot

13   cuts and winbacks assuming that all current UNE-P requests are treated instead as

14   UNE-L requests. The organization of this Table and the abbreviations used are the

15   same as for Table 1.

16   **Table 2**

17   **Customer Migrations Generating Hot Cuts In The Post-UNE-P Environment**

FROM\TO	Verizon Retail	CLEC FB	CLEC UNE-L	CLEC UNE-P	CLEC Resale
Verizon Retail			X	X	
CLEC FB					
CLEC UNE-L	W		X	X	W
CLEC UNE-P	W		X	X	W
CLEC Resale			X	X	

18

19 Q.   Please explain Table 2.

1 A. In this table, CLEC UNE-P denotes customers previously served by UNE-P that would

2 be served by UNE-L in the new environment. Hence, the rows (and columns)

3 associated with CLEC UNE-L and CLEC UNE-P are identical. The matrix exhibits the

4 same symmetry as in the previous table for the same reasons.

5 Q. Based on these matrices, how can we calculate the additional demand for hot cuts that

6 would be brought about by a decision to eliminate UNE-P as a competitive provisioning

7 alternative?

8 A. The incremental demand for hot cuts would be the difference between the hot cuts

9 performed under current rules (Table 1) and the hot cuts that would be performed if

10 switching were eliminated (Table 2). Thus, additional hot cut demand could be

11 calculated simply by subtracting each entry in Table 1 from the corresponding entry in

12 Table 2. This is done in Table 3, below.

13 **Table 3**

14 **Customer Migrations Generating Incremental Hot Cuts In The Post-UNE-P**
15 **Environment**

FROM\TO	Verizon Retail	CLEC FB	CLEC UNE-L	CLEC UNE-P	CLEC Resale
Verizon Retail				X(1)	
CLEC FB					
CLEC UNE-L				X(2)	
CLEC UNE-P	W(1)		X(2)	X(3)	W(4)
CLEC Resale				X(4)	

16

17 Q. Please explain Table 3.

18 A. This incremental hot cut matrix exhibits the same symmetry as the previous matrices:

19 the difference between two symmetric matrices obviously must also be symmetric.

1   Because the only difference we consider is the availability of UNE-P, the only entries in

2   this matrix are in the UNE-P rows or columns. Thus, other types of frame work (e.g.,

3   connects and disconnects) do not appear in Table 3, despite the fact that these types

4   comprise the bulk of current frame work. While disconnects and connects are

5   important, they (i) are not hot cuts and do not require the coordination of a hot cut and

6   (ii) their volume is unchanged by the potential reclassification of UNE-P as UNE-L.

7   They thus do not figure in our analysis of Verizon MA's incremental work

8   requirements.

9   Q.   What is meant by Categories (1) – (4) in the key to Table 3?

10   A.   These four categories of migrations identify all of the circumstances in which

11   migrations can lead to incremental hot cuts.

12   Category 1: CLEC UNE-P from/to Verizon Retail: These migrations do not require a

13   hot cut under the current regime because they involve no change in the ownership of the

14   switch providing dial tone. In the post-UNE-P world, the migration may require a

15   change in switch provider.

16   Category 2: CLEC UNE-P from/to CLEC UNE-L: Under the current regime, this

17   migration requires a hot cut or involves a winback. In the current data, there are few

18   transactions in these cells. However, in the future, the migration of the embedded base

19   will obviously generate a large number of transactions in the CLEC UNE-P to CLEC

20   UNE-L cell during the limited transitional period.

1   Category 3: CLEC UNE-P from/to CLEC UNE-P: Currently, customer migrations

2   between CLECs using UNE-P do not require any form of hot cut. Post-UNE-P, they

3   may require a hot cut.

4   Category 4: CLEC resale from/to CLEC UNE-P: Under the current regime, these

5   migrations do not require any form of hot cut because the Verizon MA switch is used in

6   both cases. Post-UNE-P, a hot cut or winback will be required, since the UNE-L

7   customer will be served from the CLEC switch and the resale customer will be served

8   from Verizon's switch.

9 Q.   Quantitatively, how do the number of transactions in the numbered cells above

10   compare?

11 A.   The bulk of hot cut demand stemming from customer migration should occur in

12   Category (1), for two reasons. First, the ILEC's market share — which is currently a

13   majority of the market — implies that a large fraction of migrations should occur to and

14   from Verizon MA's retail service. Second, a large fraction of CLEC provisioning uses

15   their own facilities (49%), and those migrations do not involve hot cuts. A large

16   fraction of the remaining migrations involving hot cuts will occur to and from CLEC

17   UNE-based services. In December 2002, 21 percent of those CLEC access lines were

18   CLEC UNEs; 49 percent were CLEC facilities-based and 30 percent were CLEC resale.

19   (FCC Local Competition Survey, Table 10.)

20   Thus, the current distribution of local competition arrangements is disproportionately

21   weighted towards Category (1) — migrations between Verizon MA 's retail service and

22   CLEC UNE-P and UNE-L services. If this distribution remains stable over time, we

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1   would expect future migrations to mirror the current distribution, and a large fraction of

2   migrations will fall into Category (1).

3   This effect can be illustrated using publicly available, statewide data (*i.e.*, the FCC data

4   for Massachusetts) to obtain an estimate of the number of incremental hot cuts that a

5   given migration of customers would produce. I start with a base case in which the

6   markets are stable and migration is uniform across customers, and I will assume that the

7   migrations are randomly distributed, in the sense that they will not depend on the type

8   of service (UNE-L, UNE-P, resale, etc.) provided by their old or new service providers.

9   In this case, if 1,000 Massachusetts customer lines were to change suppliers in a given

10   time period, on average 833 of the migrations would be by the ILECs' customers and

11   167 would be by the customers of some CLEC.

12   Of the 833 lines lost by the incumbent, 179 (0.2147 x 833) would migrate to CLEC

13   UNE-L and UNE-P. These 179 migrations would thus fall into Category (1) above.

14   The remaining 654 lines would have no effect on incremental hot cuts because they

15   would migrate to facilities-based CLECs (406 = 0.4877 x 833) and resale-based CLECs

16   (248 = 0.2976 x 833).

17   Of the 167 migrations associated with CLEC customers, 35.9 (167 × 0.2147) are

18   initially served on UNEs, 81.4 (167 × 0.4877) on a CLEC facilities basis and 49.7 (167

19   × 0.2976) on resale. Based on current market shares, 83 percent of each of these

20   migrations would go to the ILEC. The remaining 17 percent would be distributed

21   across the three "flavors" of CLEC service (UNE, facilities-based, and resale) in the

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1   current proportions of 21, 49 and 30 percent respectively. The resulting classification

2   of migrations are shown in Table 4.

3   **Table 4**

4   **Number of Migrations by Type**

FROM\TO	Incumbent Retail	CLEC FB	CLEC UNE-P/ UNE-L	CLEC Resale	Total
Incumbent Retail		406.4	178.9	248.0	833.3
CLEC FB	67.8	6.6	2.9	4.0	81.3
CLEC UNE-P/L	29.8	2.9	1.3	1.8	35.8
CLEC Resale	41.3	4.0	1.8	2.5	49.6

5

6   Q.   How should Table 4 be interpreted?

7   A.   Table 4 shows the expected migrations, by cells, stemming from a uniform migration of

8   1,000 customer lines. Recall that Table 3 identifies the cells in which hot cuts (and

9   winbacks) qualify as incremental hot cuts and places them in four categories. Adding

10   together the migrations in Table 4 for the cells that comprise Category (1) in Table 3,

11   for example, would give $178.9 + 29.8 = 208.8$ migrations that would (ordinarily)

12   produce hot cut requests. Noting that only about half the migrations that correspond to

13   winbacks actually require hot cuts, we would add 178.9 to half of 29.8 (14.9) to get

14   193.8 expected incremental hot cuts in Category (1). A similar calculation applies to

15   Category (4). For the combined Categories (2) and (3), we observe in Table 4 1.3

16   migrations, which are the sum of two hot cut categories and two potential winback

17   categories. Assuming the flows between UNE-P and UNE-L to be symmetric, the 1.3

18   migrations would give rise to 1.3×0.75, or 0.975 hot cuts and winbacks.

19   Putting these calculations together in Table 5, we observe that in the current market in

20   Massachusetts (and assuming a stable market and uniform customer migration), a

1   customer migration has only about a 20 percent chance of leading to a direct hot cut or

2   win back. Moreover, only a portion of those migration-related hot cuts would be

3   incremental to current hot cut volumes. This portion can be determined by multiplying

4   the total migration-related hot cuts by the percentage of the unbundled loops in Verizon

5   territory that are part of a UNE-P arrangement (*i.e.*, that are not being provided as UNE-

6   L)

7   **[BEGIN VERIZON PROPRIETARY]**

8

9

10

11   **[END VERIZON PROPRIETARY]**

12   Q.   How should Table 5 be interpreted?

13   A.   Several aspects of Table 5 are important. First, only 213.6 of our 1000 migrations fall

14   into categories that correspond to incremental hot cuts. For completeness, note that the

15   remaining migrations consist of 494.6 lines to and from CLEC facilities-based suppliers

16   and 291.8 lines between incumbent retail and CLEC resale and between different CLEC

17   resale providers. None of these 786.4 migrations generate hot cuts today or incremental

18   hot cuts in a post-UNE-P environment. In addition, 16.0 migrations are eliminated

19   because of the winbacks adjustment and 82.2 UNE migrations are associated with

20   existing UNE-L and thus do not contribute to incremental hot cuts. Putting these

21   numbers together, $786.4 + 16.0 + 82.2 = 884.7$ migrations that do not entail incremental

22   hot cuts under these assumptions.

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1   Second, nearly all hot cuts produced by customer migration are in Category (1). At

2   current levels of CLEC market penetration, migrations between CLECs (Categories (2)

3   – (4)) are quantitatively unimportant. Note however, that our method of measuring

4   incremental hot cut demand — adding the current flow of UNE-P requests to the current

5   flow of winbacks — includes all four categories.

6 Q. This base case assumes that market shares remain constant, so that lines migrate to

7   incumbents and CLECs in the same proportion as their current market shares. How

8   would the results in Table 5 change if CLEC market shares increased, so that lines

9   migrate more-than-proportionately to CLEC suppliers?

10 A. The results are not sensitive to that assumption. If, for example, customers were twice

11   as likely to migrate to a CLEC as indicated by the current CLEC market share, the

12   percentage of migrations resulting in a hot cut would rise from 19.76 to 19.83 percent.

13   At the extremes, if no customers migrated to the incumbent, the hot cut percentage

14   would rise to 20.1 percent. If no customers migrated to CLECs, the hot cut percentage

15   would fall to 19.68 percent.

16 Q. This base case assumes that customer migration is uniformly distributed among

17   incumbent and CLEC customers. How would the results in Table 5 change if CLEC

18   customers were more inclined to migrate than the incumbent's customers?

19 A. This assumption is also not critical. If CLEC customers were twice as likely to migrate

20   as incumbent customers, the hot cut percentage would fall from 19.76 to 18 percent. If

21   no incumbent customers ever chose to migrate, 11.2 percent of migrations would entail

1   a hot cut. At the other extreme, if CLEC customers never migrated, the hot cut

2   percentage would rise to only 21.5 percent.

3   Q.   How would you interpret these results?

4   A.   This exercise answers two questions. First, some CLECs have argued that without

5   UNE-P, the incidence of hot cuts should be similar to that of inter- and/or intraLATA

6   PIC changes experienced in the toll market. In both cases, the argument goes, a

7   consumer's choice to change suppliers results in a change in the network configuration:

8   for toll, a software change to redirect 1+ calls and for local exchange service; for local,

9   a hot cut to shift the loop from one carrier's switch to another's. The numbers in Table

10   5 show that this argument is wrong, because when a local exchange customer changes

11   carriers, a hot cut is not necessarily required. In fact, using current market

12   characteristics, a local exchange customer migration involves a hot cut only about 20

13   percent of the time.

14   Second, for forecasting the demand for incremental hot cut requests, these results show

15   that the number of incremental hot cuts in a post-UNE-P environment can be

16   conservatively approximated by the number of UNE-P migrations and winbacks

17   currently being performed.[3] The likely incremental hot cut requests from categories

18   (2)-(4) are insignificant. I note, however, that the data for UNE-P migration captures

19   elements of (2) – (4) in the sense that the data include all migrations to UNE-P, *i.e.*,

20   from Verizon MA and from UNE-L, UNE-P and resale.

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[3] This assumes that the current flow of UNE-P migration is representative of the "steady-state" in a mature market.
I discuss this in detail below in Section III.

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1   Third, the results show that the volume of incremental hot cuts associated with 1000

2   migrations is quite small **[BEGIN VERIZON PROPRIETARY] [END VERIZON**

3   **PROPRIETARY]**.   This result is due to the comparatively large proportion of

4   Massachusetts CLEC lines that are facilities-based and Verizon-supplied UNE loops

5   using UNE-L.

6 Q.   You have discussed ways of assessing the incremental hot cut demand that would result

7   from the elimination of UNE-P and its replacement by UNE-L. Would Verizon MA

8   have to provision this level of demand on the first day of the post-UNE-P environment

9   (*i.e.*, immediately after a Department determination of non-impairment)?

10 A.   No. A portion of the incremental hot cuts stemming from customer migration will

11   increase over the period during which the embedded base of UNE-P lines is converted

12   to UNE-L. For customers migrating from CLEC to Verizon MA retail service, a hot cut

13   occurs only when the customer migrates from UNE-L service. As the embedded base is

14   converted from UNE-P to UNE-L, a larger proportion of CLEC-to-Verizon migrations

15   will require a hot cut, and it is only after the embedded base is fully converted that

16   winback migrations will generate the full amount of incremental hot cuts that we have

17   calculated. In addition, even after the embedded base is fully converted, winbacks can

18   be expected to increase if the volume of UNE-L lines continues to increase. In the next

19   section, I calculate the rates at which the embedded base of CLEC UNE-P lines will be

20   converted to UNE-L, and that information, coupled with the growth in the volume of

21   incremental UNE-L lines, will be used to estimate the time path of winback migrations

22   and the associated volume of incremental hot cuts.

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1   Q.   For the five months following a non-impairment determination, in which CLECs may

2   continue to purchase UNE-Ps, what would be your estimate of incremental hot cuts

3   stemming from customer migration?

4   A.   Zero. Assuming CLECs continue to purchase UNE-Ps and UNE-Ls at their historical

5   rates, no incremental hot cuts will be required from customer migration (hot cuts will be

6   required from conversion of the embedded base beginning in month 3). That is, I

7   assume that during the first five months, CLECs acquiring new customers will continue

8   to purchase UNE-Ps at their historical level, and I do not start the process of substituting

9   UNE-Ls for UNE-Ps for these lines until after the five-month grace period has expired.

10   **B.**   **Conversion Of The Embedded Base Of UNE-P Customers**

11   Q.   You have previously discussed the regulatory requirements and practical considerations

12   that will affect the facilities migrations that will result from the conversion of the

13   embedded base of UNE-P lines. Based on that discussion, what is a reasonable

14   assumption to make regarding the timing of the conversion of the embedded base to

15   alternative service arrangements and, more importantly, to the flow of hot cuts that

16   Verizon MA will be required to undertake as a result of that conversion?

17   A.   As discussed above, it is reasonable to assume that the conversion of the embedded base

18   will be uniformly distributed within each of the three periods specified in the *Triennial*

19   *Review Order*. Thus, if we use x to represent the embedded base of customers, then a

20   formula for the number of monthly conversions for the first 11 months following the

21   submission of a conversion plan would be (x/3)/11, or x/33; the formula for the number

22   of monthly conversions for the second (7-month) portion of the conversion period is

1   (x/3)/7, or x/21, and the same x/21 will be converted per month during the last 7-month

2   period.

3 **C.   Post-UNE-P Incremental Hot Cuts**

4 Q.   Based on these analyses, what would be a conservative estimate of the flow of

5   incremental hot cuts required in a post-UNE-P environment?

6 A.   A conservative estimate of the monthly flow of incremental hot cuts required in a post-

7   UNE-P environment during the conversion period would be (1) a forecast of the flow of

8   UNE-P migrations, (2) winbacks from UNE-P transactions and (3) those required for a

9   uniform conversion of the embedded base within each of the three periods specified by

10   the FCC.[4] As described above, the winback transactions requiring a hot cut would ramp

11   up over the embedded base conversion period and reach its full level of estimated

12   incremental hot cuts at the end of the 27-month period. After the 27-month embedded

13   base conversion period, the third component of incremental hot cut demand would be

14   eliminated. For the reasons discussed below, I believe that the actual volume of hot

15   cuts likely to be performed by Verizon MA will be much lower than the numbers

16   presented in this testimony.

17 Q.   Please explain why the estimate presented here for incremental hot cuts required in a

18   post-UNE-P environment — UNE-P migrations and winback transactions and a

---

[4] Technically, there is one component of incremental hot cuts excluded from UNE-P migrations and winbacks from UNE-P. A customer migration from UNE-P to resale in the future will require a hot cut, and these transactions are not included in current volumes of UNE-P migrations (which measure migrations to UNE-P from all sources) or winbacks from UNE-P (which measure migrations from UNE-P to Verizon). However, for reasons discussed in Table 4 and 5 above, these migrations are likely to be insignificant.

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1   uniformed conversion of the embedded base — is a conservative estimate of future hot

2   cuts in the post-UNE-P environment.

3 A.   There are several reasons why the estimate is conservative. First the proliferation of

4   bundling as a strategy used by wireline, wireless and cable providers means that churn

5   rates are likely to be lower because consumers are less likely to switch from a bundle of

6   services to another supplier's bundle of services than from a single service to a

7   competitor's single service offering.

8   Second, the analysis does not take into account the likely increase in customer

9   migrations to alternative networks such as wireless, cable, telephony and Internet

10   telephony. Therefore, even if churn were to remain constant during the relevant time

11   period, there would still be a decrease in the demand for hot cuts because

12   proportionately more customers would be migrating to alternative suppliers rather than

13   to suppliers who use UNE-L.

14   Third, my analysis conservatively assumes all CLECs that were previously using UNE-

15   P will now use UNE-L, even though there are other options available to the CLEC such

16   as facilities provisioning or resale.

17   Finally, FCC rules require that impairment determinations for mass market switching be

18   made on a market-area-by-market area basis. To the extent that Verizon MA requests

19   or receives relief in less than its entire Massachusetts service area, those methods will

20   underestimate the required volume of incremental hot cuts.

21 Q.   Please explain your earlier statement that bundling will lead to reduced churn.

1 A.   Recently, companies have begun aggressively to market bundled packages of

2   telecommunications services, and according to company officials and telecom experts,

3   this packaging strategy has the effect of reducing customer churn. The current data

4   regarding the incidence of UNE-P migration and winback does not fully take this

5   phenomenon into account.

6   All else equal, bundled packaging of telecommunications services (or any services for

7   that matter) tends to make consumers less likely to change providers compared to when

8   customers purchase non-bundled services. Transactions costs of switching suppliers are

9   lower with stand-alone service offerings since all that matters is quality and price for a

10   single service. Customers purchasing a bundle of services would need to compare

11   competitors' offering of multiple services before deciding to switch suppliers, and this

12   would make the customer less likely to switch from the bundled service. Bundling can

13   extend the effects of a customer's preference for one service of a particular supplier to

14   other services of that supplier. For example, a customer of AT&T Complete Choice is

15   less likely to switch from AT&T than a Verizon MA local exchange customer who uses

16   AT&T long distance.

17 Q.   Is there evidence to support the proposition that offering bundled services makes

18   customers less likely to switch providers?

19 A.   Yes, there is evidence in the trade press that one of the reasons why companies are

20   moving to bundled offerings is to reduce customer churn. For example, according to

21   Mark Johnson, director of marketing for Z-Tel Communications, a large CLEC:

1	Everyone is trying to offer bundles of services…The more services a
2	customer gets from a particular carrier, the harder it is for that customer to
3	leave.[5]

4   According to an article in the *New York Times*, managers believe that customers who

5   buy packages are more loyal. For example, according to an AT&T spokesperson:

| 6 | It's human nature…People have less desire to move away from you if you |
| 7 | have all their business.[6] |

8   While estimates vary of the impact that bundling has and will have on customer churn,

9   the general conclusion is that bundling will significantly reduce customer churn.

10   According to AT&T:

11	AT&T executives, meanwhile, say 'bundled services are 20 to 30 percent
12	stickier than standalone long distance accounts.' In fact, customers who
13	buy a bundled product are 'two to eight times more likely to buy
14	additional products,' compared to customers who only buy long distance.[7]

15   AT&T states that in single-family AT&T homes with only video services, churn runs

16   are more than 2% a month but when the home purchases 2 and 3 products the churn

17   rates fall to 1.59% and 1.2%, a drop of 20 and 40 percent, respectively.[8]

18   Similarly, according to Sprint, its customer churn fell 20 percent for bundled customers

19   and that during the first 60 days of a new account, the churn rate of bundled customers

20   is half that of customers buying just one service.[9]

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[5] Michael Braga, "Bundles of problems besets long-distance," *St. Petersburg Times*, July 5, 2000.

[6] *Id*.

[7] Gary Kim, "All You Can Eat: Competitive providers are seeing their fill of small business bundles," http://www.fatpipeonline.com/archives/july2003buffet.asp

[8] K.C. Neel, "The Book on Bundling," *CableWorld*, July 15, 2002.

[9] Jessica Hall, "Telecom companies find success in lighter 'bundles'", *Reuters News*, January 12, 2001.

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1   These numbers are fairly consistent with churn forecasts published by Bernstein

2   Research.[10]   In a recent report, Bernstein Research published forecasts for 2003 of

3   monthly churn rates for stand-alone local, long distance, mobile, broadband and video

4   and for these services provided as a bundle. The average churn rate for the stand-alone

5   services was approximately 3.0%. However, when these services are purchased as a

6   bundle, Bernstein Research estimates the churn rate to be only 0.4%.

7   Q.   Please explain why the existence of alternatives to the telephony wireline network (such

8   as Internet telephony) would likely impact the demand for hot cuts?

9   A.   The existence and growth of alternatives to the telephony wireline network reduces the

10   demand for hot cuts because for any given number of customers migrating from

11   Verizon MA, a greater proportion would migrate to suppliers that do not require the use

12   of UNE-L and, therefore, do not require a hot cut. For example, assume that today for

13   every 10 customers that migrate from Verizon MA, six (60%) go to a CLEC that uses

14   UNE-L and thus require hot cuts, three (30%) go to a facilities-based or resale CLEC

15   and only one (10%) goes to an alternative network. If the proportion of customers

16   migrating from Verizon MA to an alternative network increases to 30%, then for the

17   same 10 migrations, there would be as many as 2 (20 percent) fewer hot cuts.

18   The analysis presented above for incremental hot cut demand does not take into account

19   the trend of local exchange customers migrating from wireline suppliers to alternative

20   networks such as wireless, cable telephony, and Internet telephony. This reduces the

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[10] See Halpern & Luria, *supra* note 1, at 8.

1   demand for hot cuts by reducing the proportion of customers that migrate from Verizon

2   MA to CLECs, so that even if customer churn were to remain constant in the future,

3   there would still be a decrease in the demand for hot cuts because proportionally more

4   customers would be migrating to alternative suppliers rather than to suppliers who use

5   UNE-L.

6 Q.   Is the proportion of customer migrations from Verizon MA to alternative networks

7   likely to increase in the future?

8 A.   Yes. There is evidence that the pace of migration from traditional wireline telephony

9   networks to alternative networks such as cable telephony, wireless, and Internet

10   telephony will likely accelerate in the future. According to the FCC:

11   Verizon, SBC, and BellSouth saw business and consumer access lines fall
12   3.6, 4.1, and 3.2 percent, respectively, in 2002, for a total decrease of 5.5
13   million lines, with wireless substitution being a significant factor. [11]

14   And not all the reductions in access lines were due to reductions in second lines.

15   According to Forbes, in 2001 as many as three million customers decided to forgo a

16   home phone, going wireless instead. [12]   According to the FCC, the number of wireless

17   subscribers in Massachusetts increased 12 percent between December 2001 and

18   December 2002 and nearly doubled since December 1999. [13]

19   Cable telephony is proliferating as well. The same Forbes article states that:

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[11] Federal Communications Commission, "8th Annual CMRS Competition Report" (rel. July 14, 2003) ("CMRS Report").

[12] Scott Woolley, "Bad Connection," *Forbes.com*, August 8, 2002.

[13] FCC Local Competition Report: Status as of December 2002, Table 13.

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1   Still worse for the Bells than cord-cutting is losing customers to the cable
2   companies. About 1.7 million Americans now get their phone service
3   over cable lines…In the few markets where cable has been around for over
4   two years, about 20% to 25% of homes tend to sign up, say AT&T. [14]

5   And a report less than one year later put the number of cable telephony customers at 3

6   million as of December 2002, almost double the 1.7 million figure in 2001.[15] Given

7   that the cable telephony service is generally in its infancy, these figures are likely to

8   increase significantly in the future, thus impacting the proportion of migrations that

9   require a hot cut.

10   Q.   Why is it conservative to assume that all CLECs currently utilizing UNE-P would

11   switch to UNE-L if Verizon MA's obligation to provide "mass market" local switching

12   on an unbundled basis were eliminated?

13   A.   The estimate for incremental hot cuts discussed above assumed that all CLECs that

14   were previously using UNE-P will now use UNE-L, even though there are other options

15   available to the CLEC, such as providing its own switches and loops or reselling

16   Verizon MA's retail services. If CLECs choose to use these other options, there would

17   be no hot cut performed. While it is difficult to forecast exactly how the CLECs will

18   provision service in the post-UNE-P environment, it is certainly a conservative

19   assumption for purposes of estimating incremental hot cuts to assume that all UNE-Ps

20   will be provisioned through UNE-L in the future.

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[14] *Id*.

[15] Forbes.com, http://www.forbes.com/forbes/2002/0812084_pring.html. CBS MarketWatch.com, "Baby Bell Rivals Win More Local Users," June 12, 2003

1 Q. How do the FCC rules relating to state-commission impairment determinations for

2   mass-market local switching affect the analysis of incremental hot cuts?

3 A. In the "nine month" proceedings authorized under the *Triennial Review Order*, non-

4   impairment determinations relating to mass-market local switching are to be made on a

5   market-area-by-market-area basis, with the precise market areas to be determined by the

6   state commission, subject to the constraint that the market area may not be the entire

7   state. Although precise market areas for purposes of the mass-market local switching

8   analysis have not yet been adopted by the Department, ILECs may pursue local

9   switching relief only in certain discrete geographic areas of the State; and, of course, the

10   Department may ultimately make non-impairment determinations in some market areas

11   but not others. In other words, local switching relief is only being sought at this point,

12   and therefore will only be granted, for portions of the State. This analysis of

13   incremental hot cut activity is therefore conservative in that it assumes that UNE-P

14   would become unavailable in the entire State.

15 **III. DATA ANALYSIS**

16 Q. What data were used in your forecast of the volume of incremental hot cuts?

17 A. Verizon MA data on various types of customer migrations were the primary source of

18   data used in the analysis. A description of the input data that was utilized is provided in

19   Exhibit II.

20 Q. What is the volume of incremental hot cuts that you believe Verizon MA should be

21   prepared to handle on a monthly basis if CLECs are denied access to mass-market

22   unbundled local switching?

1   A.   As discussed previously in the testimony, a conservative estimate of the incremental

2   number of hot cuts and winbacks during the conversion period consists of (1) a forecast

3   of the flow of UNE-P migrations, (2) an estimate of the winbacks from UNE-P and (3)

4   the transactions that will result from the conversion of the embedded base. After the

5   conversion period, item (3) goes away and the incremental hot cuts consist of items (1)

6   and (2) only. Exhibit III provides a summary of the incremental hot cuts required over

7   the conversion period.

8   Q.   Please describe how you calculated the flow of UNE-P migrations.

9   A.   I began by examining the UNE-P migration data from January 2002 to the present: see

10   Exhibit IV. The data are only available from January 2002, but as can be seen in the

11   exhibit, there are over **[BEGIN VERIZON PROPRIETARY] [END VERIZON**

12   **PROPRIETARY]** UNE-P migrations in January 2002. This relatively high number of

13   UNE-P migrations indicates that January 2002 was unlikely the beginning point of

14   UNE-P competition for Verizon MA. In addition, long distance competition was

15   authorized for Verizon MA in April 2001 and more active UNE-P-based competition

16   began on that date. Thus, I treat April 2001 as the starting point of UNE-P competition

17   for this forecasting exercise.

18   Q.   Do you consider the most recent level of UNE-P migration as indicative of what to

19   expect over the next few years?

20   A.   No. I consider the recent levels of UNE-P migration as similar to the levels experienced

21   by a product that has reached an intermediate stage of rapid growth of its life cycle in

22   the marketplace. When products are first introduced, there are relatively few buyers,

1   and time must pass before demand levels reflect those of a mature market in a steady

2   state. In general, the life cycle of products resembles an S-shape logit curve where

3   initially, demand is low and growing slowly, followed by a period of rapid growth.

4   After this phase, demand levels reach an asymptote, remaining relatively constant for

5   some period of time, followed possibly by a period of negative growth and decay. An

6   examination of the UNE-P migration data indicates a steep rising trend in the number of

7   migrations. There were approximately **[BEGIN VERIZON PROPRIETARY] [END**

8   **VERIZON PROPRIETARY]** UNE-P migrations in January 2002; that number

9   reached over **[BEGIN VERIZON PROPRIETARY] [END VERIZON**

10   **PROPRIETARY]** by September 2003. (See Exhibit IV) The increasing growth rate

11   leads me to conclude that the market is currently in the rapid growth period of the

12   product's life cycle and has not yet reached a steady state. Thus, I would expect further

13   increases from the current level of UNE-P migrations and then a leveling to a steady

14   state in the near future.

15   Q.   Can you forecast the steady state rate of UNE-P migration?

16   A.   Yes, it is possible to forecast the steady-state rate of UNE-P migration from experience

17   in other mature markets. One cannot reliably forecast this steady-state rate from current

18   data in Massachusetts because without a reference point, it is difficult to infer from data

19   in the middle of an S-shaped curve where the upper limit of the curve will be. Thus, it

20   is necessary to have some external evidence regarding the likely demand level

21   experienced in a similar but mature market to infer the height of the S curve for Verizon

22   MA. If (i) the current level of UNE-P migrations, (ii) the steady state rate of UNE-P

1   migrations and (iii) the length of time necessary for the market to reach the steady state

2   are known, the intermediate monthly UNE-P migration values can be forecasted (i.e.,

3   determine the monthly values from the most recent period to the date of the mature

4   market after which UNE-P migrations remain roughly constant.)

5 Q.   What is a reasonable estimate of the steady state rate of UNE-P migration?

6 A.   In a recent proceeding in New York on behalf of Verizon, I determined that in that

7   mature UNE-P market, one could expect monthly UNE-P migrations to average

8   approximately **[BEGIN VERIZON PROPRIETARY] [END VERIZON**

9   **PROPRIETARY]** of total retail lines. As the steady state of UNE-P migrations in the

10   Verizon New York territory was reached approximately during the 2002-2003 period, I

11   would estimate that it took about two years after long distance competition was

12   authorized and CLEC entry accelerated for the steady state to be reached in New York.

13   Of course, applying this assumption to other markets and other geographic areas entails

14   a significant approximation. The serving territories of Verizon New York and Verizon

15   MA are different in many respects, so that the steady-state rate of UNE-P migration

16   might be very different in the two states. However, I would expect the steady state rate

17   of UNE-P migration to be higher, if anything, in New York than in Massachusetts, so

18   applying this assumption would tend to over–forecast future UNE-P migration and

19   future demand for hot cuts in Massachusetts.

20   Similarly, the time from the beginning of UNE-based competition to the steady state

21   will differ across states. Since CLEC competition prior to 271 authority was at a higher

22   level in New York than in Massachusetts, I assume that UNE migrations in Verizon's

1   Massachusetts service territory will take longer to reach steady state than it did in New

2   York: approximately four years from the beginning of UNE-P competition to the point

3   where UNE migration becomes a constant proportion of Verizon's retail lines.

4   Assuming UNE-P competition began in the Verizon MA territories approximately in

5   April 2001, I would expect migration to reach a steady state at about **[BEGIN**

6   **VERIZON PROPRIETARY] [END VERIZON PROPRIETARY]** percent of retail

7   lines in about April 2005. Assuming conservatively that the number of retail lines

8   remains constant during this period, this method estimates a steady state of

9   approximately **[BEGIN   VERIZON   PROPRIETARY]   [END   VERIZON**

10   **PROPRIETARY]** UNE-P migrations per month by April 2005.

11   Q.   How do you determine the monthly change in UNE-P migration from the most recent

12   period available (September 2003) to April 2005?

13   A.   I calculate the monthly growth rate required to grow the current level of UNE-P

14   migration in September 2003 **[BEGIN VERIZON PROPRIETARY] [END**

15   **VERIZON PROPRIETARY]** to the steady state level of approximately **[BEGIN**

16   **VERIZON PROPRIETARY] [END VERIZON PROPRIETARY]** in April 2005.

17   This monthly growth rate is **[BEGIN VERIZON PROPRIETARY] [END VERIZON**

18   **PROPRIETARY]**. I then grow the current level of UNE-P migration by **[BEGIN**

19   **VERIZON PROPRIETARY] [END VERIZON PROPRIETARY]** on a monthly

20   basis.

21   Q.   Are there any additional reasons why your estimate of UNE-P migration over the next

22   several years is likely to overestimate the actual amounts?

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1   A.   Yes. While it is necessary to use information from Verizon NY territories to estimate

2   the steady state in the Verizon MA territories, these two markets are different and it is

3   likely that the steady state in the two markets will differ. The demographic

4   characteristics of New York are likely to attract more competition, on average, than in

5   Verizon's Massachusetts service area, and this effect would reduce the steady-state

6   proportion of retail lines that would migrate to competitors in a given month.

7   Q.   Please explain how you forecasted winbacks.

8   A.   I examined the average value of winbacks from UNE-P as a proportion of total UNE-P

9   lines in service for different time periods during January 2002 to September 2003. I

10   observed that the average over the most recent twelve months has the highest winback

11   proportion. Therefore, to be conservative, I calculated the average value of winbacks

12   from UNE-P as a proportion of total UNE-P lines in service for this recent twelve-

13   month   period   **[BEGIN   VERIZON   PROPRIETARY]   [END   VERIZON**

14   **PROPRIETARY]** and used this figure to forecast winbacks.

15   Specifically, I assume that monthly winbacks during the conversion period and beyond

16   are proportional to the volume of UNE-L lines, *i.e.*, equal to **[BEGIN VERIZON**

17   **PROPRIETARY] [END VERIZON PROPRIETARY]** percent of the incremental

18   UNE-L lines added as a result of the elimination of the switching element. Specifically,

19   the number of incremental UNE-Ls consists of (1) the monthly conversion of the

20   embedded base of UNE-P and (2) the net additions to the monthly volume of UNE-Ps.

21   Q.   How did you forecast the embedded base?

1   A.   I began with the most recent number for the embedded base, approximately **[BEGIN**

2   **VERIZON PROPRIETARY] [END VERIZON PROPRIETARY]** and grew the

3   embedded base by changes in UNE-P migrations, winbacks and disconnects.

4   Specifically, rather than forecast the embedded base, I calculated the embedded base in

5   a given month t as equal to the embedded base in month t-1, plus UNE-P migrations in

6   month t, minus winbacks from UNE-P in month t, minus disconnects in month t, see

7   Exhibit V.[16] As described above, this approach is likely to be an upper bound on the

8   volume of UNE-P embedded base over the forecasted period.

9   Q.   What is the volume of incremental hot cuts that Verizon MA should be prepared to

10   handle as a result of converting the embedded base?

11   A.   I assume that the Department will render a decision in July 2004 so that the starting

12   point for conversion of the embedded base is July 2004. Based on my methodology for

13   growing the embedded base, I forecast the embedded base to increase from **[BEGIN**

14   **VERIZON PROPRIETARY] [END VERIZON PROPRIETARY]** in September

15   2003 to **[BEGIN VERIZON PROPRIETARY] [END VERIZON PROPRIETARY]**

16   in July 2004. I also assume that the conversion process will not begin until two months

17   after July 2004. An analysis of incremental hot cut volumes resulting from the

18   conversion of the embedded base is presented in Exhibit VI.

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[16] For disconnects, I assume that roughly 1-2 percent of lines in service in any given month disconnect due to factors other than migration such as mobility, non-payment of service or death. Long-term demographic statistics for the U.S. show that households move on average every five years, amounting to a 20 percent annual disconnect rate for moves.

1   Q.   How does the fact that CLECs will be able to purchase UNE-Ps for five additional

2   months after July 2004 affect your analysis?

3   A.   The analysis accounts for this fact by increasing the embedded base during the first five

4   months by $1+g-c$, where g represents the estimated growth rate of the volume of UNE-P

5   lines from September 2003 to December 2004 of **[BEGIN VERIZON**

6   **PROPRIETARY] [END VERIZON PROPRIETARY]**. December 2004 is the last

7   month that CLECs will be able to order UNE-Ps assuming that the Department's

8   decision is effective as of July 2004. The letter c represents the number of lines

9   converted per month during the first period of the conversion. Because there are no

10   conversions in the first two months, the embedded base grows by $1+g$ during the first

11   two months and by $1+g-c$ during months three through five. After month five, the

12   embedded based decreases as described above.

13   Q.   Will the embedded base also decrease due to winbacks?

14   A.   Yes. During the conversion process, we assume that Verizon will continue to win back

15   customers at the historical monthly rate, as described above. Therefore, during the

16   conversion period, the embedded base is being reduced due to the conversion process

17   and due to Verizon winbacks.

18   Q.   Given your forecasts for the incremental hot cuts required if the Department finds that

19   CLECs are not impaired without access to Verizon MA's local switching unbundled

20   element, is it likely that Verizon MA will be able to hire the additional people required?

21   A.   Yes, current economic conditions suggest that work force expansion would not be

22   difficult. First, a sufficient number of potential employees are clearly available.

1   Because of force reductions in the telecommunications industry over the last several

2   years, there is a large pool of experienced workers available to fill incremental staffing

3   needs. Indeed, because the qualifications for these positions are relatively modest,

4   Verizon would not be limited to hiring experienced telecommunications workers. An

5   analysis of current unemployment statistics for Massachusetts shows evidence that

6   qualified job seekers are available in numbers far exceeding those that would be

7   required by Verizon. Massachusetts State unemployment across all industry segments

8   has risen from about 85,400 in September 2000 to 197,800 in September 2003.[17] Thus,

9   there are over 110,000 more people seeking work today in Massachusetts than there

10   were at the end of the telecom boom in 2000.

11   Second, the well-publicized meltdown in the global telecommunications industry has

12   resulted in massive layoffs and force reductions. Until recently, the *Financial Times*

13   maintained a website tracking announcements of layoffs by major communications

14   employers. According to this compendium, between July 2000 and May 2002, the

15   global telecom sector cut approximately 539,000 jobs.[18] In the U.S., as of May 2002,

16   Qwest, BellSouth and Verizon had announced job cuts of 13,000, 4,200 and 7,500

17   respectively. In September 2002, SBC announced a reduction of 11,000 jobs, in

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[17]Massachusetts Division of Employment and Training. Mass Stats. See Labor Force Data.
http://massstats.detma.org/websaras/frame_it.asp?theProductName=MassStats

[18] *See* http://news.ft.com/ft/gx.cgi/ftc?pagename=View&c=Article&cid=FT3MOCS3OPC, the FT.com Telecoms
job cuts watch, last updated May 14, 2002. This figure includes telecom operators, cable operators and network
equipment providers, categories that have been particularly hard hit.

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1   addition to the 10,000 jobs eliminated in the first three quarters of 2002.[19] AT&T's

2   announced layoffs amounted to 10,000 jobs by May 2002.

3   Third, FCC data on U.S. telephone employment also shows a dramatic reduction,

4   continuing into 2003. Based on preliminary data through March 2003, total

5   employment has fallen by about 160,000 jobs from its peak in 2001. See Exhibit VII.

6   In sum, all indications from the labor markets suggest that sufficient workers are

7   available to manage the expected additional work load from incremental hot cuts.

8 Q.   Does this conclude your testimony?

9 A,   Yes.

10

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[19] "SBC to Cut 11,000 Jobs and Investment Due to Outmoded Regulatory Scheme and Weak Economy," SBC Press Release, September 26, 2002.